**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Energy Transfer Simulation**

**Discovery Education**

<http://app.discoveryeducation.com/search?Ntt=Energy+transfer+simulation%3A+light>

**Introduction:**

The “visible light” we see is just one form of light. Other forms of light include radio waves, microwaves, infrared light, ultraviolet light, x-rays, and gamma waves. All these forms of light are examples of electromagnetic radiation – waves of energy that travel through space. All electromagnetic waves travel at the speed of light and carry energy. What sets the different waves apart is the amount of energy they carry. When electromagnetic waves pass through a medium, such as air or water, a certain amount of this energy is transferred. Sometimes – depending on the wave and the medium – no energy is transferred at all.

**Directions:**

Use the simulation to compare how different electromagnetic waves transmit through different mediums.

**Procedures:**

1. From the Main Screen select the Simulations icon. Then click the Energy Transfer icon.
2. Read Start Here and close the window. For more information, click Background and close the window. For detailed directions, click Help and read “How to Use this Simulation.”
3. Trial 1: Click Type of Energy and select Visible light. Click Medium and select Gas (air). Next, click Detect Energy. How were the energy waves detected? Record your results in the chart below. Now change the Medium to Solid (granite), click Detect Energy, and record the new results.
4. Trial 2-5: Repeat these steps to compare the effects of different energy types: Infrared light, Ultraviolet light, Radio waves, X-rays, Microwaves, and Gamma rays. For each Type of Energy, test Gas (air), Solid (granite), and Liquid (water) as the Medium. Record your results for each trial below.

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| --- | --- | --- | --- | --- |
|  | Energy Type | Medium | Transmitter?  (Yes or No) | How was the energy detected? |
| Trial  1 |  |  |  |  |
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| Trial  2 |  |  |  |  |
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|  |  |  |
| Trial  3 |  |  |  |  |
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| Trial  4 |  |  |  |  |
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| Trial  5 |  |  |  |  |
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| Trial  6 |  |  |  |  |
|  |  |  |
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| Trial  7 |  |  |  |  |
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**Procedures (*continued*)**

1. Which type of light do we experience as heat? Which type of light gives us sunburns?
2. Which forms of light are not transferred through solid (granite)?
3. Which form of light has the longest waves? Why are these waves ideal for transmitting television signals? (See Background for help.)
4. Which form of light has the highest frequency? Why do these waves carry the most energy? (See Background for help.)
5. Why can’t we see other types of light, such as radio waves or x-rays? (See Background for help.)

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1. What does the prism show us about visible light? (Google a ‘prism’ to see the image) What would you see if all these colors were combined again?
2. The main colors that make up visible light are: violet, blue, green, yellow, orange, and red. Which color do you think has the longest wavelength? Which has the shortest?IAL